

## ABSTRACT OF THE DISCLOSURE

The present invention related to doping of amorphous silicon and polysilicon in trench structures for semiconductor devices. A single gas phase doping step is performed after a thin layer of amorphous silicon or polysilicon is deposited in the trench. The gas phase doping occurs at elevated temperature and moderate pressure to yield a dopant concentration on the order of  $1 \times 10^{20}$  atoms/cm<sup>3</sup>.

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